



# Mini Bike Light

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## SUMMARY

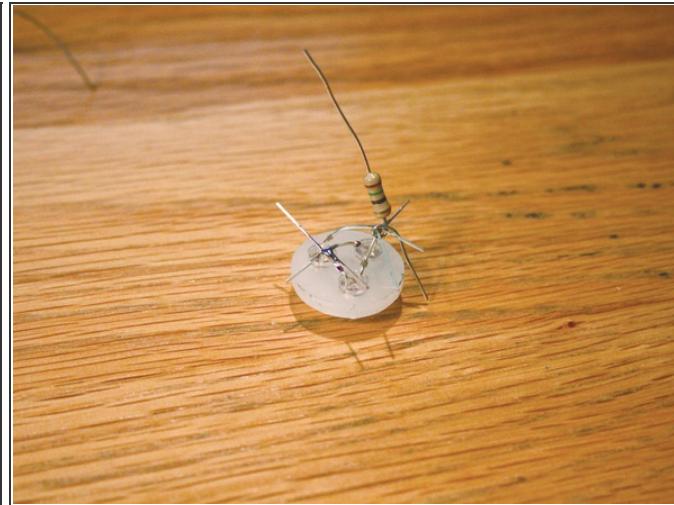
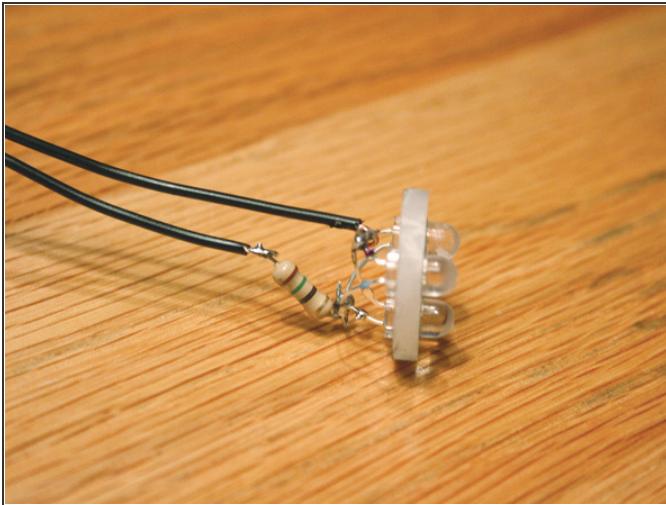
I wanted to build a small, bright, and durable LED light for my bike, and I read online that plumbing parts work well as housings. So I made a 3-LED headlamp that's enclosed by a 3/4" hose faucet adapter and powered by an outboard battery pack.

### Step 1 — Make the LED mount.



- To hold the LEDs, use some scrap translucent plastic.
- Using a drill press, mark an outline on the plastic sheet by cutting partway through with a 1 1/4" hole saw.
- Drill three 5mm holes inside it for the LEDs, then finished cutting out the disk with the hole saw.
- Trim the edges of the disk until it fits snugly in the rubber side of the hose adapter, stretching the rubber a bit. I used a grinder, but you can also use a file or sandpaper.

## Step 2 — Connect the LEDs.



- Super-glue the LEDs in the disk's holes, arranged so that all their short (negative) leads point toward the center.
- Bend and solder together the short leads, then the long (positive) leads, avoiding any short-long contact.
- Solder a  $15\Omega$  resistor to the positive side, and clip the excess length on all leads. Keep the whole affair small, with leads as short as possible, so it will all fit in the housing.
- Add wires to connect to the switch and power. Solder one to the negative leads and the other to the resistor, marking which one is which.

## Step 3 — Put the light into the housing.



- Fit the disk into the rubber end of the adapter, with the wires exiting the threaded hole in the back.
- The rubber held my disk well without glue, but otherwise I would suggest a thin film of epoxy. I cut off just enough extra rubber to make a shim which, along with some electrical tape, holds the wires in back and keeps out water and debris.



#### Step 4 — Wire the circuit.



- Mount the light on top of your handlebar, the switch against the stem, and the battery pack behind the head tube.
- Trim the wires to the right lengths to connect these, leaving enough slack to let you turn the handlebar. The switch connects between the negative LED lead and negative battery terminal, and the positive LED lead connects to the red, positive battery terminal.
- You can see a wiring diagram at [http://makezine.com/14/diycircuits\\_bikel...](http://makezine.com/14/diycircuits_bikel...)

#### Step 5 — Attach the light.



- Mount the light by interlocking the hose clamp that came with the adapter with a second clamp around the handlebar.
- For the switch and battery pack, use zip ties, and add more to hold the wires against the frame. Make it all tight so that nothing falls off if you go over a big bump.

## Step 6 — Alternate version.

- I made a second light for my girlfriend that has a better switch setup. I mounted a micro-mini switch in the hose adapter's hole in back, and routed the wires out a hole drilled through the side. This eliminates the big switch zip-tied to the handlebar.
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This project originally appeared in [MAKE Volume 14](#).

### Related Posts on Make: Online:

How-To Tuesday: Mini Bike Light

<http://blog.makezine.com/archive/2009/03...>

Weekend Project Video: Mini Bike Light

<http://blog.makezine.com/archive/2009/10...>

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